REMARKS/ARGUMENTS

Status of the Claims

Claims 1 to 16, 18 to 32, 34 to 38, 40 and 41 are still pending in the application.

Applicant gratefully acknowledges that the Examiner has indicated that claims 18 to 32, 34 and 35 are allowed.

Applicant gratefully acknowledges the Examiner's indication that claim 38 would be allowable if rewritten in independent form including all of the limitations of base claims and intervening claims. Claim 38 has been maintained in its current form as Applicant believes the rejected claim is novel and patentably distinguishes over the cited art, and is therefore allowable for the reasons described below.

Claim Rejections – 35 U.S.C. 103

In paragraph 5 of the Office Action, the Examiner has rejected claims 1 and 11 under 35 U.S.C. 103(a) as being unpatentable over ten Brink (US Patent 6,611,513) in view of Stein (USP 6,175,590) and Dent et al. (US Patent Application Publication 2003/0036359).

In rejecting claims under 35 U.S.C. § 103(a), the Examiner bears the initial burden of establishing a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). *See also In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). It is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d, 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), *viz.*, (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art. Additionally, in making a rejection under 35 U.S.C. § 103(a) on the basis of obviousness, the Examiner must provide some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int'l. Co. v. Teleflex Inc.*,127 S.Ct. 1727, 1741 (2007). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the appellant. *See Oetiker*, 977

F.2d at 1445. *See also Piasecki*, 745 F.2d at 1472. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See Oetiker*, 977 F.2d at 1445; *Piasecki*, 745 F.2d at 1472.

Applicant submits that claims 1 and 11 of the present application are patentable over ten Brink, Stein and Dent et al., as the Examiner has not properly determined the differences between the claimed invention and the prior art. Furthermore, the Examiner has not provided a valid explanation to support an obviousness rejection under 35 U.S.C. 103. Applicant's reasoning is detailed below.

Claim 1

Missing Elements

The following is a discussion of why the cited references do not disclose all the elements of the rejected claim. While it may be considered that "the mere existence of differences between prior art and an invention does not establish the invention's non-obviousness", Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one skilled in the art (Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR international Co.* v. *Teleflex Inc.*, published in Federal Register Vol. 72, No. 195 October 10, 2007). As such, if elements from a claim are not disclosed by the combination of cited references and no valid reasoning is provided why the missing elements would be obvious, this may provide a strong basis for why a claim should not be rejected based on obviousness.

The Examiner has alleged that newly cited reference Dent et al. discloses the limitation of "a correlator adapted to produce a channel quality indicator" in Dent et al. at page 7 paragraphs [0088] and [0090], page 9 paragraphs [0107] - [0110], page 11 paragraph [0123] and page 18 paragraph [0223].

Dent et al. makes reference to a signal quality feedback channel in paragraph [0088]. It is disclosed in this paragraph that a "target desired signal level may be signalled from each receiver (i.e. MS 16) to the network 10 by a signal quality feedback channel". However, there is

no indication or specific disclosure that the signal transmitted on the signal quality feedback channel is the result of any form of an output of "a correlator adapted to produce a channel quality indicator", as recited in claim 1.

Dent et al. discloses a method for a mobile station, i.e. MS 16, forming loop-back signals that include "samples from the received composite signals, or using processed samples obtained from the MS's receive. In the first instance, looped back composite signal samples generally are used by the network 10 to perform transmit rate pre-compensation, while the processed samples looped back from the MSs 16 generally are used to perform symbol rate pre-compensation" (emphasis added), paragraph [0071]. At paragraph [0073] Dent et al. further discloses "Thus, network 10 stores, at least temporarily, transmit signal information in memory 34 for use by loop-back processor 32. Of course, a variety of comparison-type processing is available, including correlation of loop-back symbol information with the corresponding information symbol information in previously transmitted portions of the information symbol streams S1, S2, and S3" (emphasis added). Dent et al. discloses that a receiver transmits samples of the originally transmitted signal in the form received at the receiver and then the network performs correlation of the samples of originally transmitted signal in the form received at the receiver with portions of the originally transmitted signal saved at the transmitter. Applicant submits that Dent et al. does not disclose "a correlator adapted to produce a channel quality indicator", especially wherein the correlator is located in the receiver so that it can transmit the channel quality indicator to the transmitter, as recited in claim 1.

Paragraphs [0105]-[0107] disclose a further example that the network determines how much cross-interference is still present in the mobile stations. Paragraph [0107] states "The network 10 may use receive interference cancellation matrices as disclosed in the parent applications to ensure that the signals received from MS1 to MSm are separated. The separated soft-values are then correlated with symbol streams S1 to Sm to determine if a given soft value stream contains interference from one or more unintended symbol streams" (emphasis added).

Furthermore, looking at claim 1 of Dent et al., it is seen that the claim recites a network transmitter, a network receiver and a transmit processor. The transmit processor can be readily considered to be a part of the network transmitter based on the language used. In particular, the

transmitter processor recites memory to retain transmit information, a first processing system for precompensating the combined transmit signal based on the estimated transmit channel characteristics and a second processing system for generating the estimated transmit channel characteristics based on comparing the loop-back signals with the retained transmit information. Clearly, this indicates that the transmitter is performing a comparison (correlation) and the comparison occurs between the retained transmit information and loop-back signals sent by the receiver. Claim 15 further discloses that the loop-back signals comprise loop-back samples of composite received signals as received by the individual ones of the mobile stations and wherein retained transmit information comprises retained samples of the combined transmit signal. Applicant submits that what is disclosed in Dent et al. is not the same as what is disclosed in the present application and recited in claim 1.

Furthermore, Dent et al. does not disclose that the correlator is adapted to produce a channel quality indicator "by determining a correlation between the sequence of soft data element decisions and the re-encoded output sequence, wherein the apparatus is adapted to feed the channel quality indicator back to a transmitter", as recited in claim 1. Dent et al. discloses that whatever form of comparison that occurs between feedback from the receiver with originally transmitted signals occurs by the network, not the receiver. Claim 1 recites that the channel quality indicator is determined by the apparatus is "adapted to feed the channel quality indicator back to a transmitter for use in determining and applying an appropriate coding rate and modulation to the source data element sequence".

For at least the reasons discussed above, Applicant respectfully submits that the combination of ten Brink, Stein and Dent et al. does not teach all the limitations recited in claim 1. Furthermore, the Examiner has failed to explain why the missing limitation would be obvious to one skilled in the art. Without all the limitations of claim 1 being disclosed by the two references and no reason provided by the Examiner why these missing limitations would be obvious, it is not reasonable to expect one skilled in the art to arrive at the claimed invention.

Reason to Combine

Once the scope of the prior art is ascertained, the content of the prior art must be properly combined. An obviousness inquiry requires review of a number of factors, including the background knowledge possessed by a person having ordinary skill in the art, to determine whether there was an apparent reason to combine the elements of the prior art in the fashion claimed by the present invention. For the Patent Office to combine references in support of an obviousness rejection, the Patent Office must identify a reason why a person of ordinary skill in the art would have combined the references ***KSR Int'l v. Teleflex, Inc.,*** *No. 04-1350, slip op. at 14 (U.S., Apr. 30, 2007)*, Id. at 15. Even if the Patent Office is able to articulate and support a suggestion to combine the references, it is impermissible to pick and choose elements from the prior art while using the application as a template.

Applicant submits that there is no suggestion of a desirability of the claimed invention in any of the references that would serve as a reason for one skilled in the art to combine the collection of references identified by the Examiner. On the contrary, Applicant submits that there are several reasons that the references would not be considered suitable for combining, as will be discussed in detail below.

To begin, Applicant submits that the relevance of the ten Brink reference is not clear. The reference relates to iterative de-mapping of a received signal. There is no re-encoding of a decoded output sequence in the matter claimed, and there is no feeding back of any channel quality, both of which are conceded by the Examiner on page 4 of the Office Action.

Furthermore, with respect to Dent et al., Applicant submits that Dent et al. does not recite a correlator that is located in the receiver, but a correlator that is disclosed elsewhere than the receiver, and controlled by the network, and which uses a loop-back signal from the receiver. There is no suggestion or disclosure of applying what is recited in Dent et al. in the present claims. Applicant submits that one skilled in the art would not consider the disclosure in Dent et al. in combination with the other cited references.

The Examiner's motivation for combining ten Brink, Stein and Dent et al. set out at the bottom of page 5 and the top of page 6 with respect to the limitation of "a correlator adapted to

produce a channel quality indicator" alleged to be disclosed by Dent et al., is tied to his view that Dent et al. teaches this limitation. As detailed above, this was an incorrect interpretation of Dent et al., and as such this also affects the Examiner's motivation argument.

As Dent et al. discloses a comparison (correlation) being performed by the network, elsewhere than at the receiver, Applicant submits that Dent et al. teaches away from Stein, which discloses correlation at the receiver. Applicant submits that Dent et al. therefore teaches away from the present application. As Dent et al. teaches away from Stein, Applicant submits that one skilled in the art would not combine Stein with Dent et al. in the manner alleged by the Examiner.

In addition, as Dent et al. discloses a different manner of correlation of the content that is being transmitted by the receiver to the network than correlation that is performed Stein, Applicant submits that the proposed modification of the references resulting from the combining of the references suggested by the Examiner would change the principle of operation of either Stein or Dent et al., as the two reference perform correlation in two different manners, in particular where such correlation occurs. Applicant submits that this is another reason that one skilled in the art would not combine Stein with Dent et al. in the manner alleged by the Examiner.

On the basis of the above, Applicant respectfully submits the Examiner has not provided a reason why a person of ordinary skill in the art would have combined the references. On this basis the Examiner is respectfully requested to withdraw the rejection of claim 1 under 35 U.S.C. 103(a).

Similar arguments apply to claim 11, and as such the Examiner is respectfully requested to withdraw the rejection of claim 11 under 35 U.S.C. 103(a).

Claims 2-10 and 12-16

Claims 2-10 and 12-16 have been rejected in view of at least the combination of ten Brink, Stein and Dent et al. and for some of the identified claims, further in view of one or more additional references. As these claims are dependent on claim 1 or claim 11, either directly or

indirectly, Applicant submits that these claims should be patentable at least for the same reasons discussed above pertaining to claims 1 and 11.

The Examiner is respectfully requested to withdraw all remaining 35 U.S.C. 103 rejections of the claims based on combination of references that include at least ten Brink, Stein and Dent et al.

Claims 36 and 37

In paragraph 12, the Examiner has rejected claims 36 and 37, under 35 U.S.C. 103(a) as being unpatentable over Agee et al. (USP 6,621,851) in view of Tiedemann, JR. et al. (US Pub. 2006/0094460).

The Examiner indicates on page 3, paragraph 3 that Applicant's arguments with respect to claim 36 have been considered, but are moot in view of new grounds of rejection. Applicant submits that the Examiner has cited the same references and reasoning with regard to claim 36 and there are in fact no new grounds of rejection. Therefore, Applicant submits the same arguments that were previously submitted for the Examiner.

The Examiner submits that Agee discloses "processing the encoded symbols based on a scattered pilot pattern to recover the encoded fast signalling message" at col. 7, lines 54-64, col. 17, lines 50-60, col. 23, lines 31-37 and col. 23, line 61 to col. 24, line 2. Applicant submits that the portions of Agee cited by the Examiner disclose generally how the discrete multitone stacked carrier scheme operates (col. 7, lines 54-64), how a channel estimate can be performed using a pilot signal (col. 17, lines 50-60), how to perform a frequency domain to time domain transformation (col. 23, lines 31-37) and how selected tones within a tone set are designated as pilots and are distributed throughout the frequency band (col. 23, lines 61 to col. 24, line 2). Applicant submits that Agee does not suggest or disclose an OFDM frame containing an "encoded fast signalling message" as recited in the preamble of claim 36 or the step of "processing the encoded symbols based on a scattered pilot pattern to recover the encoded fast signalling message" (emphasis added).

For at least the reason discussed above, Applicant respectfully submits that Agee et al. does not teach all the limitations which are alleged to be disclosed by the Examiner with regard to claim 36. Even if Teidemann JR. et al. does teach the limitations which are missing from Agee et al., which Applicant does not concede, Applicant submits that the Examiner has failed to provide a suitable reason for combining the references in view of Agee et al. not disclosing limitations relied upon in the Examiner's present rejection. Without all the limitations of claim 36 being disclosed by the two references and no reason provided by the Examiner why these missing limitations would be obvious, Applicant respectfully submits that the Examiner has failed to provide a suitable reason for combining Agee et al. and Teidemann JR. et al..

Claim 37 is dependent upon claim 36 and should be allowed for at least the same reasons as discussed above with regard to claim 36.

On this basis it is considered that the Examiner has erred in rejecting claims 36 and 37 under 35 U.S.C. 103(a). The Examiner is respectfully requested to withdraw the obviousness rejection of claim 36.

Claim Rejections – 35 U.S.C. 102

Controlling case law has frequently addressed rejections under 35 U.S.C. § 102. "For a prior art reference to anticipate in terms of 35 U.S.C. Section 102, **every element** of the claimed invention **must** be **identically** shown in a single reference." Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677, 7 U.S.P.Q.2d 1315, 1317 (Fed. Cir. 1988; emphasis added). The disclosed elements must be arranged as in the claim under review. See Lindemann Machinefabrik v. American Hoist & Derrick Co., 730 F.2d 1452, 1458, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984). If any claim, element, or step is absent from the reference that is being relied upon, there is **no** anticipation. Kloster Speedsteel AB v. Crucible, Inc., 793 F. 2d 1565, 230 U.S.P.Q. 81 (Fed. Cir. 1986; emphasis added). The following analysis of the present rejections is respectfully offered with guidance from the foregoing controlling case law decisions.

In paragraph 14 of the Office Action the Examiner has maintained the rejection of claims 40 and 41 as being anticipated by Walton. Applicant indicates on page 3, paragraph 3 that Applicant's arguments with respect to claims 40 and 41 have been considered, but are moot

in view of new grounds of rejection. Applicant submits that the Examiner has cited the same references and reasoning with regard to claims 40 and 41. Therefore, Applicant submits the same arguments that were previously submitted for the Examiner.

The Examiner alleges on pages 15 and 16 that Walton discloses "wherein a set of transmission parameter signalling symbols are transmitted on the overhead channel (data channel) with strong encoding (increased reliability) such that at a receiver, they can be decoded accurately, re-encoded, and the re-encoded symbols treated as known pilot symbols which can then be used for channel estimation" at page 9, paragraph [0100] and [0101], page 10 paragraphs [0103] and [0104] and page 11 paragraph [0112].

Applicant submits that the portions of Walton identified by the Examiner do not explicitly disclose that "a set of transmission parameter signalling symbols are transmitted by the at least one transmit antenna on the overhead channel such that at a receiver, they can be decoded accurately, re-encoded, and the re-encoded symbols treated as known pilot symbols which can then be used for channel estimation" (emphasis added). In paragraph [0104], Walton discloses that the "RX MIMO/data processor 556 performs processing complementary to that performed by TX data processor 514 and TX MIMO processor 520 and provides decoded data to a data sink 560". As there is no disclosure that TX data processor 514 and TX MIMO processor 520 encode and then decode the encoded signal, which would be the complementary processes of decoding the received signal and re-encoding the decoded signal, Applicant submits that not all of the limitations of claim 40 are identically disclosed by Walton.

The specified portions of Walton also do not explicitly disclose the "set of transmission parameter signalling symbols are transmitted by the at least one transmit antenna on the overhead channel". The Examiner equates the expression "overhead channel" of claim 40 to "data channel" as disclosed by Walton. Applicant submits that an overhead channel is a channel not used for data, but is a channel used for overhead/control signalling. In paragraph [0112], Walton discloses that "Pilot data (e.g., data of known pattern) may also be encoded and multiplexed with the processed information bits. The processed pilot data may be transmitted (e.g., in a time division multiplexed (TDM) manner) in all or a subset of the transmission channels used to transmit the information bits". There is no indication that theses channels are

overhead channels. Furthermore, the Examiner does not indicate that Walton discloses "transmission parameter signalling symbols" being transmitted in overhead channels.

Applicant submits that the Examiner has improperly characterized Walton. The limitations that are disclosed in Walton and are alleged to be equivalent to features of claim 40 are not the same or are missing altogether. As Walton does not identically show **every element** of the claimed invention, Applicant submits that Walton does not anticipate claim 40.

Claim 41 recites "A receiver adapted to process the combined single overhead channel produced by the transmitter of claim 40, the receiver comprising: at least one receive antenna; a soft decoder; an encoder; the receiver being adapted to: utilize the soft decoder to decode a received signal from the at least one receive antenna containing the encoded transmission parameter signalling symbols as modified by a channel; utilize the encoder to re-encode the decoded symbols to produce known pilot symbols; and compare received symbols with the known pilot symbols to produce a channel estimate" (emphasis added). The Examiner alleges that the limitations of claim 41 are disclosed in Walton at the same portions of Walton indicated in the rejection of claim 40.

For reasons similar to those submitted above in the response to the rejection of claim 40, Applicant submits that Walton does not disclose a receiver with "an encoder" for re-encoding decoded symbols to produce known pilot symbols or any suggestion of "encoded transmission parameter signalling symbols" on a "single overhead channel". Furthermore, Applicant submits that the identified portions of Walton make no disclosure of comparing received signals with known pilot symbols to produce a channel estimate, in the manner claimed.

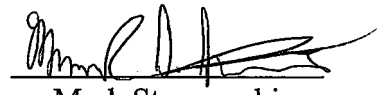
As Walton does not identically show **every element** of the claimed invention, Applicant submits that Walton et al. does not anticipate claim 41.

On this basis it is considered that the Examiner has erred in rejecting claims 40 and 41 under 35 U.S.C. 102(e). The Examiner is respectfully requested to withdraw the rejection of claims 40 and 41.

In view of the foregoing, early favourable consideration of this application is earnestly solicited.

Respectfully submitted,

MING JIA, ET AL

By 

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